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Food Packaging

SPECIAL REPORT
1000 RESEARCH PROJECTS

Also:
Emphasis: Materials handling/distribution
Freeze concentration breakthrough
Government forecast for '83

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COVER STORY: This special report contains a listing and analysis of 1,000 Food Research Projects currently active or recently completed.

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(Cover photo by Robert Veltri)

GOV'T FORECAST FOR '83: The U.S. Department of Commerce forecasts slow growth for some segments of the food industry; and no growth for others.

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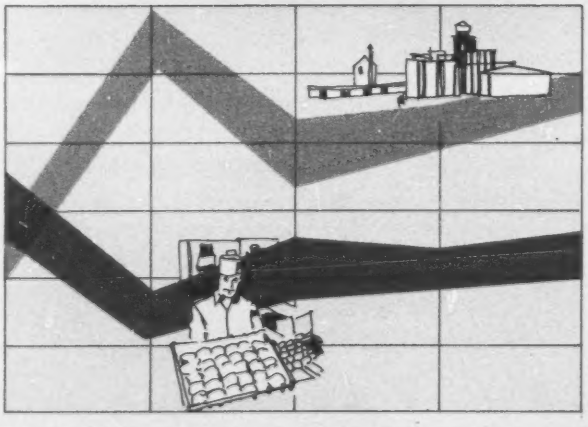

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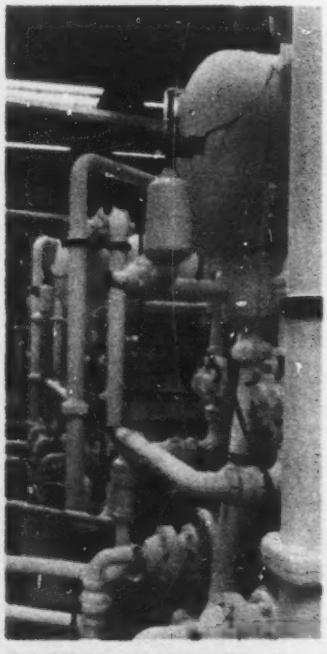

FREEZE CONCENTRATION: A new energy-efficient process is expected to breathe new life into freeze concentration. First installations show promising results.

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THE POUCH-CUP: A foil-lined paperboard pouch turns into a drinking cup. It's used in Japan to package instant drinks and soups.

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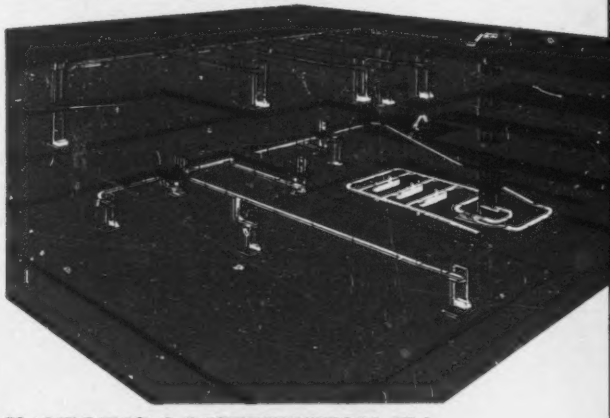

HANDLING & DISTRIBUTION: This month, special emphasis is given to materials handling and distribution. Along with a run-down of new equipment, eight articles describe how food companies are taking advantage of the latest techniques.

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Events

The industry in 1983: What's ahead?

The U.S. Department of Commerce forecasts slow growth for some, none for others

Growth in food and beverage industry shipments is straining under the twin influences of a slowing population growth and the generally flaccid condition of the American and world economies. According to the newly released *U.S. Industrial Outlook 1983* from the Department of Commerce, the value of all food and beverage shipments was about $286 billion last year. This was a 6 percent increase over 1981, but only 1.1 percent when inflation is factored in. If the current inflation rate holds, the Commerce Department forecasts a slim 1.1 percent real increase in 1983.

Although the profits of industry firms—particularly the major ones—have held up in 1982, the industry as a whole is faced with declining consumer spending on food and beverages as a proportion of all personal consumption expenditures. That figure declined at an average rate of 0.8 percent between 1976 and 1981, when the share of consumer outlays spent on food and beverages figured at 19.1 percent.

The good news, of course, was the relief the industry felt from declining agricultural prices and only modest increases in wage rates, energy and packaging and transportation costs. This was reflected in producer prices that rose only an estimated 1 percent in 1982, compared with 2.2 percent the previous year.

MEL SELIGSOHN, News Editor

The Commerce Department report confirms again that advancing technology is impacting on production employment which decreased about 2 percent last year. Between 1972 and 1982, the number of production workers decreased 0.3 percent annually, a loss of more than 21,000 jobs. However, the real value of production rose by 1.7 percent annually as processors invested in new and more efficient plants and equipment.

Meat packers are hurting

Growth, however, appears to be coming more through mergers and acquisitions rather than capital spending. "Responding to stagnant product markets, weak real growth, high interest rates, costly equity funding, and overcapacity, food and beverage processors emphasized mergers and acquisitions as a growth strategy in 1982. Conversely, firms decreased their spending for new plant and equipment.

"In fact, it appeared that a record number of food industry mergers and acquisitions were consummated during the year. By mid-year, 345 acquisitions of food-related companies had been recorded, an increase of 20 percent over 1981," said the *Outlook*, adding that an estimated 700 mergers and acquisitions had taken place last year.

The following are profiles from *Outlook '83* from industries that account for over 70 percent of all food and beverage shipments:

Meat and Meat Products

This industry is composed of meat packing plants (SIC's 2011, 13), and poultry and egg processing (2016,17), with the former accounting for almost 85 percent of industry shipments. The red meat industry is not expected to experience any real growth in 1983—for the seventh consecutive year. Total production is expected to be about 1.4 percent lower than in 1982.

This lack of growth is hurting profits, which according to the American Meat Institute, declined about 37 percent from 1980, the lowest in five years. Despite lower livestock and raw materials costs, operating expenses jumped 14 percent to $11.2 billion, reflecting higher wages and a 21 percent increase in interest costs.

Prospects for the poultry industry this year are more favorable. Production will probably increase, and the value of shipments of poultry and related products measured

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Trends and projections 1972-83

Industry data	1972	1977	1979	1980	1981[1]	1982[2]	Compound annual rate of growth 1972-82	1983[3]	Percent change 1982-83[3]
	(in millions of dollars except as noted)								
Red Meat Industry (SIC's 2011, 2013)									
Value of shipments[4]	27,636	39,674	53,021	53,468	54,304	56,820	—	—	—
Value of shipments (1972 $)[4]	27,636	29,450	25,678	29,295	29,332	29,430	0.6	29,460	0.1
Total employment (000)	216	211	208	207	203	197	−0.9	195	−1.0
Poultry and Related Industries (SIC's 2016, 2017)									
Value of shipments[4]	3,842	6,603	8,617	9,487	10,174	9,054	—	—	—
Value of shipments (1972 $)[4]	3,842	4,374	5,279	5,660	5,967	5,985	4.5	6,180	3.3
Total employment (000)	92	98	109	118	116	112	2.0	112	0.0
Dairy Products (SIC's 2021, 2022, 2023, 2024, 2026)									
Value of shipments[4]	16,312	26,010	30,209	33,930	36,697	39,371	—	—	—
Value of shipments (1972 $)[4]	16,312	18,110	17,315	17,781	17,975	18,491	1.3	18,514	0.1
Total employment (000)	189	154	153	149	147	146	−2.5	—	—
Canned Fruits, Vegetables and Specialties (SIC's 2032, 2033)									
Value of shipments[4]	5,920	9,492	11,489	11,987	13,259	14,483	—	—	—
Value of shipments (1972 $)[4]	5,920	6,146	6,340	6,203	6,208	6,248	0.5	6,350	1.6
Total employment (000)	119	109	109	105	96	86	−3.3	86	0.0
Frozen Foods (SIC's 2037, 2039)									
Value of shipments[4]	3,784	6,702	8,257	8,643	9,713	10,765	—	—	—
Value of shipments (1972 $)[4]	3,784	4,462	4,537	4,489	4,449	4,499	1.7	4,635	3.0
Total employment (000)	81	88	97	91	86	82	0.1	81	−1.2
Miscellaneous Fruits and Vegetables (SIC's 2034, 2035)									
Value of shipments[4]	1,774	4,139	4,943	5,425	6,019	6,328	—	—	—
Value of shipments (1972 $)[4]	1,774	2,555	2,554	2,709	2,783	2,843	4.8	2,960	4.1
Total employment (000)	33	38	39	38	36	33	0.0	33	0.0
Cereal Breakfast Foods (SIC 2043)									
Value of shipments[4]	1,126	2,498	3,096	3,476	3,950	4,298	—	—	—
Value of shipments (1972 $)[4]	1,126	1,455	1,507	1,479	1,505	1,519	3.0	1,533	0.9
Total employment (000)	12.9	16.4	16.3	15.9	15.6	15.4	1.8	—	—
Bread, Cake, and Related Products (SIC 2051)									
Value of shipments[4]	6,132	9,275	10,738	11,703	12,435	13,255	—	—	—
Value of shipments (1972 $)[4]	6,132	6,011	5,817	5,692	5,611	5,701	−0.7	5,588	−2.0
Total employment (000)	193.5	178.0	184.4	181.9	179.4	178.0	−0.8	—	—
Cookies and Crackers (SIC 2052)									
Value of shipments[4]	1,764	2,961	3,708	4,036	4,450	4,700	—	—	—
Value of shipments (1972 $)[4]	1,764	1,702	1,850	1,810	1,841	1,897	0.7	1,927	1.63
Total employment (000)	41.1	43.8	47.0	47.7	46.4	45.4	1.0	—	—
Confectionery Products (SIC 2065)									
Value of shipments[4]	2,473	4,498	5,069	5,771	6,377	6,836	—	—	—
Value of shipments (1972 $)[4]	2,473	2,787	2,947	3,190	3,408	3,598	3.8	3,745	4.1
Total employment (000)	61	58	55	54	56	58	−0.5	57	−1.7
Alcoholic Beverages (SIC's 2082, 2084, 2085)									
Value of shipments[4]	6,717	10,312	13,303	14,940	16,607	18,358	—	—	—
Value of shipments (1972 $)[4]	6,717	8,175	9,133	9,428	9,670	10,068	4.1	10,515	4.4
Total employment (000)	79	69	71	68	68	66	−1.8	65	—
Bottled and Canned Soft Drinks									
Value of shipments[4]	5,454	10,007	12,544	13,909	15,230	16,799	—	—	—
Value of shipments (1972 $)[4]	5,454	6,386	6,980	6,785	6,341	6,698	2.1	6,775	1.1
Total employment (000)	121	114	119	118	119	122	0.1	122	—

[1] Estimated except for product price index, exports, and imports. [2] Estimated. [3] Forecast. [4] Value of all products and services sold by industry
Source: Bureau of the Census and Bureau of Industrial Economics.

The industry segments in the above chart account for over 70 percent of all food and beverage shipments in the U.S. Estimates for 1983 values are projected from a 1972 base, omitting the inflation factor.

FORECAST . . .

in constant dollars should increase about 3.3 percent. Because of efficiency factors, poultry industry shipments will probably continue to outpace those of the red meat industry in the next few years. Another plus for poultry is that consumers now perceive poultry products as healthier than red meat due to its lower fat content.

Dairy Products

Value of shipments for all dairy products should reach $18.514 billion in 1983, or unchanged in dollars adjusted for inflation. Shipments of fluid milk products, butter, and frozen desserts are expected to decrease slightly, offsetting small gains in shipments in cheese and evaporated milk. Over the long-term, shipments are expected to rise only 0.1 percent annually from 1982 to 1987, after adjustment for inflation.

However, innovative technology and product development could change the dairy industry's prospects by mid-decade. Aseptic packaging, ultrafiltration, and whey permeate conversion may help to reinvigorate the dairy sector. Shipments of cheese and yogurt—considered "health foods" by the public—should advance strongly.

Government regulation affects this sector strongly. A trend towards the reduction of price supports for dairy products, and dissatisfaction with commodity programs that have tended to load huge surpluses of cheese and other products on the government could bring monumental changes to industry business practices in the next few years.

Processed fruits, vegetables, specialties

In 1982, the value of goods produced by these sectors was estimated at $31.6 billion, about 9 percent over 1981 levels. In constant dollars, however, the value of industry production increased only 1.1 percent. Consumer demand for most canned vegetables was sluggish, as consumers showed a continuing preference for fresh or frozen products. Most of the growth in production of canned goods in recent years have been in fruit juices, ethnic foods, and tomato products.

1983 could be a turning point, however. For the first time since 1977, the industry is expected to experience a meaningful rate of real growth. The value of industry production, measured in constant dollars, will probably increase about 2.6 percent.

Fruits & vegetables are turning around

Production of canned fruits and vegetables, the largest sector should increase about 1.6 percent, aided by increased demand for aseptic products, low-sodium canned vegetables, fruits packaged in light syrup, and retortable pouch entrees. Production of frozen foods increase about 3.0 percent as additional low-calorie and high nutrition entrees help to reverse the downward per capita consumption trend. Shipments in miscellaneous fruits and vegetables will rise about 4 percent as a result of strong demand for sauces and salad dressings.

Cereal breakfast foods

The demand for these foods has slackened in recent years partly because of a decrease in the number of people under 21-years-old. Growth has come from the marketing of natural and high protein cereals, and hot cereal sales have been increasing also as a result of gains in the infant and elderly population sectors. Although brands of private and general label cereals have gained in recent years, national brands dominate the cereal market.

Because the breakfast cereal market is controlled by four large companies, the Federal Trade Commission, using the theory of "shared monopoly," attempted in 1972 to break up the industry into smaller segments. In January of 1982, however, the agency dropped the case after failing to prove collusion among the companies.

This year the value of industry shipments is expected to increase about 0.1 percent, in dollars adjusted for inflation. Firms will probably increase their promotional efforts for unsweetened and less sugared products, while new brands of cereals will probably emerge during the year.

Bakery foods

Last year the value of industry shipments of bakery products was just under $18 billion, a 6.3 percent increase or about 2 percent adjusted for inflation. 75 percent of total shipments were in the bread, cake and related products sector, which shipped about $13.3 billion; while shipments in the cookie and cracker segment increased to $4.7 billion, a 3 percent gain when adjusted for inflation.

In 1983, the value of bread, cake and related products is expected to decline about 2.0 percent, but the cookie and cracker industry should increase 1.6 percent. Shipments of variety breads will increase only marginally, while consumption of white bread will continue its gradual decline. The strength of the cookie and cracker segment will derive more from crackers than cookies, due to the fact that there has been a steady annual decrease in the age group under 20; adults generally favor unsugared crackers and snacks. Producers of fresh and frozen biscuits, frozen dough, self-rising flour, and biscuit mixes will continue to benefit from the rise in the number of fast food outlets serving breakfast.

Confectionery products

Shipments in SIC 2065 increased to about $6.4 billion last year, an increase of 6.5 percent over 1981. Chocolate and nonchocolate candies still dominate the industry, ac-

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Events

FORECAST . . .

counting for over 85 percent of product sales. The estimated value of shipments in this category was $5.6 billion, about 8 percent above 1981.

Product shipments of confectionery products in 1983 are expected to increase 3.8 percent in dollars adjusted for inflation. Prices of these products will probably remain stable, although reductions in the weight of candy bars may occur. Ingredient supplies are expected to remain plentiful.

Alcoholic beverages

Product shipments of alcoholic beverages reached an estimated $17.3 billion last year, an increase of 9 percent over 1981, or 2 percent adjusted for inflation. Per capita consumption, however, declined fractionally during the year, mainly as a result of high unemployment weakening the market for distilled spirits. Product shipments of beer and ale were up only about 1.2 percent compared with an average annual growth rate of 4 percent from 1972 to 1982, reflecting the growing number of elderly people in the population and the declining number of new users reaching the legal drinking age.

More unemployment, less booze

Prospects for the industry this year are mixed. Major gains in consumption are unlikely, and competition among product rivals for a larger share of the market is expected to intensify. Shipments in the industry are expected to increase about 4 percent, in dollars adjusted for inflation. Malt beverages should rise 1.0 percent, distilled spirits 3 percent, and wine and brandy shipments 2.6 percent.

Bottled and canned soft drinks

Shipments in SIC 2086 last year totaled an estimated $14.5 billion, an increase of about 10 percent over the previous year. Per capita consumption has increased annually over the past decade in the soft drink area, but both consumption and output have increased at a slower rate since 1979. Bottlers are striving to stimulate weakening demand, improve market share and overcome the dampening effects of a sluggish economy with new products, extensive promotion, and increased advertising.

Competition in the industry is expected to remain intense in 1983 as firms attempt to broaden market share and consolidate new product gains, although per capita consumption is not expected to increase much. Product shipments, adjusted for inflation, are expected to reach about $5.8 billion in 1983, up about 2.7 percent for the year.

OSHA suspends carcinogen list

The Occupational Safety and Health Administration (OSHA) has suspended a proposal, first presented by the Carter Administration, that would require the government to publish lists of suspected cancer-causing substances in the workplace. OSHA said the reason for doing so was to allow it to re-evaluate and revise its policy for identifying, classifying and regulating working place carcinogens.

Labor groups criticized the action, saying it was "watering down" federal policy, and another move by the Reagan Administration to weaken OSHA standards. "Without lists, there's no way to measure what they're doing in this area. It's a relapse to pre-OSHA days when research and regulatory targets were chosen in secret," said an official for the AFL-CIO's Industrial Union Department, adding that the move reflected the Administration's pro-business stance.

OSHA said that the 1980 carcinogen policy had called for the agency to publish two types of lists twice a year—a candidate list that included suspected carcinogenic substances and a more limited priority list of known carcinogens, to which exposure standards would have been set under separate health standards. One candidate list was published in 1980, but no follow up priority list.

"Misuse and misinterpretation of the agency's initial 1980 candidate list are additional reasons for the stay," said OSHA. Misinterpretation of this list could cause serious economic problems for a company making or using a listed substance. A firm's business could suffer severely before it has been shown whether a product is actually harmful, said OSHA.

Food standards: Hayes asks for industry input

The future of food standards rests in part in the hands of industry lawyers and executives, said FDA commissioner Dr. Arthur Hull Hayes, Jr., recently, and he urged more participation with the agency in formulating that future. Calling for a reassessment of the standards, Hayes commented:

"Some have argued that food standards are out of date, that they merely accomplish economic regulation, and that FDA should get out of that business. Others disagree, saying that consumers need and rely on food standards to assure uniform quality and good value. That these are not easy questions does not excuse us from answering them; we must be certain that we work together to resolve them."

Also commenting on food standards at the recent Food and Drug Law Institute conference in Washington, attorney Richard L. Frank said that grandiose approaches in trying to resolve problems involving pineapple juice, yogurt, lemonade and bread served little useful purpose and "simply lead to greater confusion among consumers and bitterness among industry executives."

Dr. Sanford A. Miller, FDA Bureau of Foods Director, predicted the emergence of new sources of food in the future will require a new approach to food standards, since a new food may actually be superior nutritionally to a standardized one.

At the same conference, FDA Commissioner Hayes discussed the agency's recent pilot enforcement program

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